VIA FACSIMILE TRANSMISSION – Official

To Fax Number 571-273-8300

In the Specification:

Page 8, after line 2, please insert the following new paragraph:

--Figure 7 shows a sample implementation for a state holding cell.--

Page 12, after the insertion of a first replacement section of text after line 15, as submitted with the Response to Office Action filed August 23, 2006, please substitute the following replacement section to replace the second section of text added by the Response to Office Action filed August 23, 2006, the figure of drawing in the prior second section being shown with a strike-through line to indicate that it is being deleted:

--Discussion from Incorporated Provisional Application No. 60/495,940 Filed 08/18/2003

--Tags built with the new RFID chip (G2) are intended to be backwards compatible with the existing first generation chips. However, several features will be added to these new chips to improve their performance in the field and to make them compatible with radio regulations in various parts of the world. The design modifications include:

--1. Add a logic state holding capacitor/circuit (superbit) in the digital state machine that will maintain information that the chip has been identified for a minimum of four seconds. This state information may be group selected. State hold is implemented as a group_select_flags, group_select_not-equal_flags (GSF, GSNF) and group_unselect_flags, group_unselect_not-equal_flags (GUSF, GUSNF). These commands will be short -(preamble+SD+3bytes+CRC) - and select on the status of the superbit flag as well as the write_ok flag.

--State Holding Passive RFID Tag

--(Docket INT-HNY-202-04)

--This invention describes a way of preserving the information on a passive RFID tag after it loses power in the field. This invention solves the problem of tags losing their state information once it loses power for short periods of time.

--This invention greatly enhances the read rate of RFID tags in the field in a real life environment where there are a zeros , by giving tags a "memory" of what state it was in before it lost power. If the tag was not able to remember the state it was in before it lost power, then the reader would have to sent out additional command to the tag creating delays and redundancy in the identification protocol.

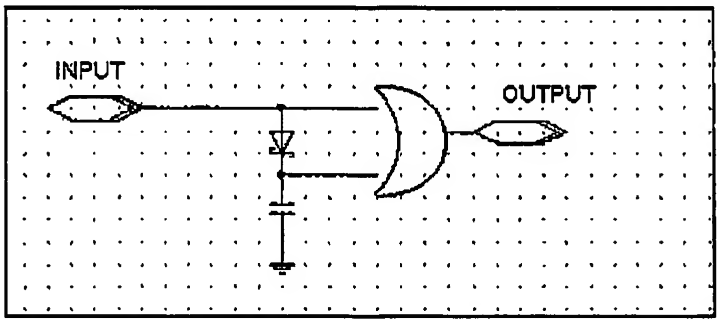
--With this solution, the identification rate can be improved and certainly prevent the deterioration of identification rate of tags when there is poor RF environment. Intermec accrues substantial advantage over competitors in having a robust tag.

--A passive RFID tag is solely powered from the RF field emission from the base station antenna. Due to reflections from walls, floors and ceilings, there are locations in the purview of the basestation where the field goes to zero or becomes very low. This phenomena called multipathing gets compounded when the basestation uses a frequency hopping RF field pattern, where the zero's get distributed to multiple locations. In applications where the RFID tag is expected to maintain its state after is powered, the presence of a zero at the tag locations depowers the tag and destroys information stored in the tag. This can cause protocols which identify the presence of multiple tags in the field very inefficient and large delays result in fully identifying all the tags. In many cases, the information that is needed to fully define the tag state is a few bits.

--For such situations a simple solution would be to have a "state preservation cell" that can store a bit value. Thus once the tag fully loses its power, and when it get power back, it can use the state information in the state preservation cell to fully get back to the

original state it was in before it lost power. The duration for which the state preservation cell can hold out would determined primarily by leakage on parasitic elements.

--A sample implementation for a state holding cell is as shown in Figure. 7.



--The voltage on the capacitor is a mirror value of input (lower than the input by a diode drop). When INPUT goes low the capacitor (as when the tag gets depowered), the capacitor continues to hold the charge and the value of INPUT, which is then reflected at the output. For the above implementation the value of OUTPUT should be latched onto INPUT when the tags gets its power again (this is not shown in the above diagram).

--In one implementation, a "superbit" state hold capacitor can be set when the tag goes into the Data_exchange state. The state hold capacitor may hold its set condition for a minimum of four seconds, for example, a time much larger than a fifty microsecond "pause time" during which power may be lost between frequency hops in frequency hop energization of the tag, and corresponding to a substantial number of frequency hop pulse times which may have a duration of 300-400 milliseconds (see USP 5,850,181 which is hereby incorporated herein by reference in its entirety). The state of the "superbit" state hold capacitor may be used to "unselect" the tag so that it does not respond to a subsequent multitag protocol command to identify.

--In another embodiment, the Data_exchange state of the tag is restored by the set condition of the state hold capacitor if power to the tag from an external field is restored

within four seconds, so that the tag will not participate in a subsequent multitag protocol until specifically reset to the Ready state. In this case the "unselect" command would not be required to prevent interference of the tag with the subsequent multitag identification protocol.--